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Possible sound mode conversion in "superfluid 4He-97% open aerogel" system

Matsumoto K., Tsuboya H., Yoshino K., Abe S., Suzuki H., Tayurskii D.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

We have studied the acoustic properties of liquid helium filled in various aerogels. The longitudinal ultrasound velocity and attenuation were measured at the frequency of 10 MHz with aerogels that had porosity from 92 to 97%. The mode intermediate between first and fourth sound was observed. The attenuation of this mode decreased with decreasing temperature for dense aerogels. However, an attenuation maximum was observed around 1.6 K for 97% open aerogel at various liquid pressures. In the present work, we discuss the possibility of the sound modes conversion between first, second sound in superfluid and aerogel sound mode in this composite system. © Springer Science+Business Media, LLC 2007.

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Keywords

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